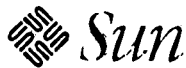


Sun Type 5c Keyboard and Type 5 Mouse Product Notes



Sun Microsystems Computer Corporation
2550 Garcia Avenue
Mountain View, CA 94043
U.S.A.

Part No. 800-6802-13
Revision A, July 1994

© 1994 Sun Microsystems, Inc.
2550 Garcia Avenue, Mountain View, California 94043-1100 U.S.A.

All rights reserved. This product and related documentation are protected by copyright and distributed under licenses restricting its use, copying, distribution, and decompilation. No part of this product or related documentation may be reproduced in any form by any means without prior written authorization of Sun and its licensors, if any.

Portions of this product may be derived from the UNIX® and Berkeley 4.3 BSD systems, licensed from UNIX System Laboratories, Inc. and the University of California, respectively. Third-party font software in this product is protected by copyright and licensed from Sun's Font Suppliers.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the United States Government is subject to the restrictions set forth in DFARS 252.227-7013 (c)(1)(ii) and FAR 52.227-19.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

TRADEMARKS

Sun, Sun Microsystems, Sun Microsystems Computer Corporation, the Sun logo, the SMCC logo, Sun OS, OpenBoot, Sun-4, and Solaris are trademarks or registered trademarks of Sun Microsystems, Inc. UNIX and OPEN LOOK are registered trademarks of UNIX System Laboratories, Inc. All other product names mentioned herein are the trademarks of their respective owners.

All SPARC trademarks, including the SCD Compliant Logo, are trademarks or registered trademarks of SPARC International, Inc. SPARCstation, ELC, SLC, LX, IPC, IPX, SPARCserver, SPARCengine, SPARCworks, SPARCclassic, and SPARCcompiler are licensed exclusively to Sun Microsystems, Inc. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc.

The OPEN LOOK® and Sun™ Graphical User Interfaces were developed by Sun Microsystems, Inc. for its users and licensees. Sun acknowledges the pioneering efforts of Xerox in researching and developing the concept of visual or graphical user interfaces for the computer industry. Sun holds a non-exclusive license from Xerox to the Xerox Graphical User Interface, which license also covers Sun's licensees who implement OPEN LOOK GUIs and otherwise comply with Sun's written license agreements.

X Window System is a trademark and product of the Massachusetts Institute of Technology.

THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

THIS PUBLICATION COULD INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. CHANGES ARE PERIODICALLY ADDED TO THE INFORMATION HEREIN; THESE CHANGES WILL BE INCORPORATED IN NEW EDITIONS OF THE PUBLICATION. SUN MICROSYSTEMS, INC. MAY MAKE IMPROVEMENTS AND/OR CHANGES IN THE PRODUCT(S) AND/OR THE PROGRAM(S) DESCRIBED IN THIS PUBLICATION AT ANY TIME.



Please
Recycle

FCC Class B Notice—United States

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit other than the one connected to the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Shielded Cables

Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits.

Modifications

Modifications to this device not approved by the party responsible for compliance may void the authority granted to the user by the FCC to operate this equipment.

DOC Class B Notice—Canada

This digital apparatus does not exceed Class B limits for radio noise emission for a digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Avis Concernant les Systèmes Appartenant à la Classe B du DOC

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Bundesrepublik Deutschland—Federal Republic of Germany

Hiermit wird bescheinigt, dass die keyboard, Model type 5c in Übereinstimmung mit den Bestimmungen der Verfügung 243/1991 funktionsstört ist. Der Deutschen Bundespost wurde das in Verkehr bringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Sun Microsystems, Incorporated: 2550 Garcia Avenue, Mountain View, California 94043-1100, USA.

Japan

第二種VCCI基準に関するお知らせ

この装置は、第二種情報装置（住宅地域またはその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

この装置は、第一種または第二種ワークステーションのオプションです。本装置を使用する場合、システムとしての適合レベルは下記の通りです。

第一種ワークステーション：第一種情報装置

第二種ワークステーション：第二種情報装置

本装置を使用する第一種ワークステーションは、第一種情報装置（商工業地域において使用されるべき情報処理装置）となります。従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

本装置を使用する第二種ワークステーションは、第二種情報装置（住宅地域またはその隣接地域において使用されるべき情報装置）となります。従って、本装置をラジオ、テレビジョン受信機に近接してご使用になると、受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。


Sun Type 5c Keyboard and Type 5 Mouse



This document contains the following sections:

- “System Support” on page 2. This section provides system support information. Be sure to install any necessary supplements before installing the Type 5c Keyboard.
- “Installing the Type 5c Keyboard and Type 5 Mouse” on page 5. This includes installing the keyboard as part of a new system, as well as replacing the keyboard on a system already in use.
- “New features” on page 9. This section describes the new features of the Type 5c Keyboard and changes from previous keyboards.
- “Diagnostic Codes” on page 15. If you have a SPARCstation™ 2, ELC™, or IPX™ system, read this section for information about the diagnostic codes display.
- “Known Problems” on page 16.

For more information about the Type 5c Keyboard, refer to *Using Your Sun Keyboard*, the reference card included with the Type 5c Keyboard.



System Support

The Sun™ Type 5c keyboard is supported on all SPARC® platforms. These tables list the supported software and firmware versions for the Type 5c keyboard.

The Type 5 mouse is supported on all systems that support the Type 4 mouse.

Operating System Support

- Solaris 1.0.1 (SunOS 4.1.2) and later releases.
 - Solaris 1.0 (SunOS 4.1.1 Rev B), SunOS 4.1.1, SunOS 4.1 *plus* SunOS patch.
 - SunOS 4.0.3 and earlier releases do not support the Type 5c keyboard. To use the Type 5c keyboard, you need to upgrade to one of the software versions listed above.
 - French-Canadian keyboard only: requires Solaris 2.4. This keyboard is not supported on earlier releases, and no patches are available.
-

Window System Support

- OpenWindows 3.0 or later.
 - OpenWindows 2.0 *plus* OpenWindows patch.
 - SunView.
 - French-Canadian keyboard only: requires OpenWindows 3.4 or later.
-

PROM Support

- OpenBoot PROM 2.5 or higher.
 - OpenBoot PROM 1.3 through 2.4 *plus* OpenBoot PROM patch for all other keyboards. Without this patch, the Type 5c keyboard works like a U.S. Type 4 keyboard.
 - OpenBoot PROMs 1.2 or earlier and SunMon EEPROMs do not support the Type 5c keyboard. The Type 5c keyboard works like a U.S. Type 4 keyboard with these boot PROM versions.
 - French-Canadian keyboard only: OpenBoot PROM 2.17 or higher. The Type 5c keyboard works like a Type 4 keyboard with earlier versions of OpenBoot PROM and SunMon EEPROMs.
-



If you need any of the three patches listed above, contact your local sales office for the Type 5 Keyboard Supplement CD (Part Number T5KBD-21). This CD contains:

- SunOS™ 4.1/4.1.1 patch
- OpenWindows™ 2.0 patch
- OpenBoot™ PROM patch

OpenBoot PROM

This section applies only to SPARCstation 1, 1+, 2, ELC, SLC, IPC, or IPX systems because these systems may have an OpenBoot PROM version 2.4 or earlier.

To determine which OpenBoot PROM version your system has, complete the following steps. This procedure will make your system unavailable for other processes, so you may want to warn clients before performing this procedure on a server.

1. **Type `/bin/sync` and press Return.**
2. **Press Stop(L1)-a (or Stop-q on French keyboards).**
The `ok` or `>` prompt appears on the screen.
3. **If you see the `>` prompt, type `n` and press Return.**
This puts you in new command mode. The `ok` prompt appears.
4. **Type `.version` at the `ok` prompt and press Return.**
5. **Note the release number.**
6. **Type `go` and press Return to resume.**
7. **Refresh your screen.**
If you are running a window system, redisplay the desktop. If you are not running a window system, press the Return key to redisplay the system prompt.



If you have an

- OpenBoot PROM 1.3 through 2.4 (without the patch)
- OpenBoot PROM 1.2 or earlier version
- SunMon EEPROM

the Type 5c keyboard works like a U.S. Type 4 keyboard at the boot PROM level. The Type 4 U.S. keyboard is shown here for your reference.

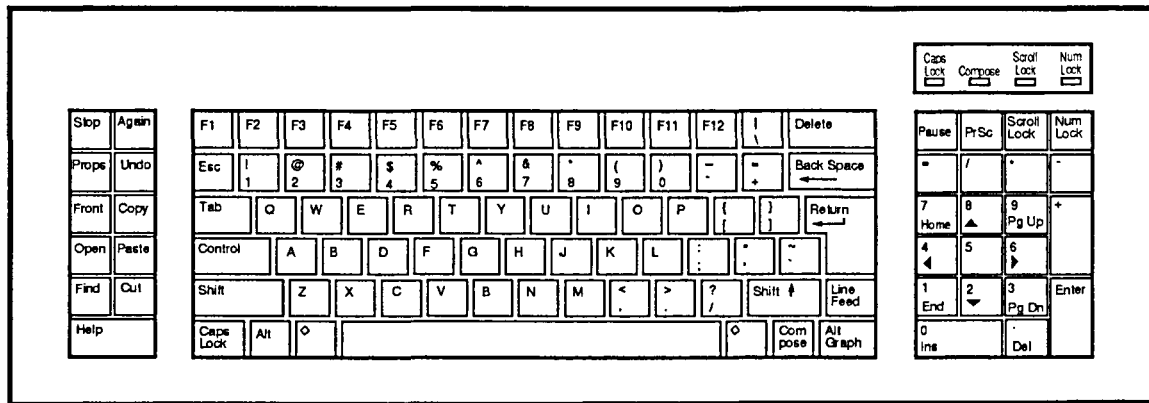


Figure 1 U.S. Type 4 Keyboard Layout

Installing the Type 5c Keyboard and Type 5 Mouse

If you have a SPARCstation 1, 1+, 2, SLC, ELC, IPC, or IPX system, these instructions replace the installation instructions for the Type 4 keyboard in the manuals for those platforms.

If your system is running:

1. **Halt your system and turn it off.**
See your system documentation for instructions.
2. **Unplug the old keyboard from the system unit.**

Connecting the Mouse to the Keyboard

1. Remove the mouse from the carton.
2. Locate the jack on the underside of the keyboard.
3. Insert the plug on the end of the mouse cable into the keyboard jack.
 - a. Align the key groove on the cable plug with the key slot on the jack.
 - b. Push the cable plug into the jack until the cable is firmly connected.

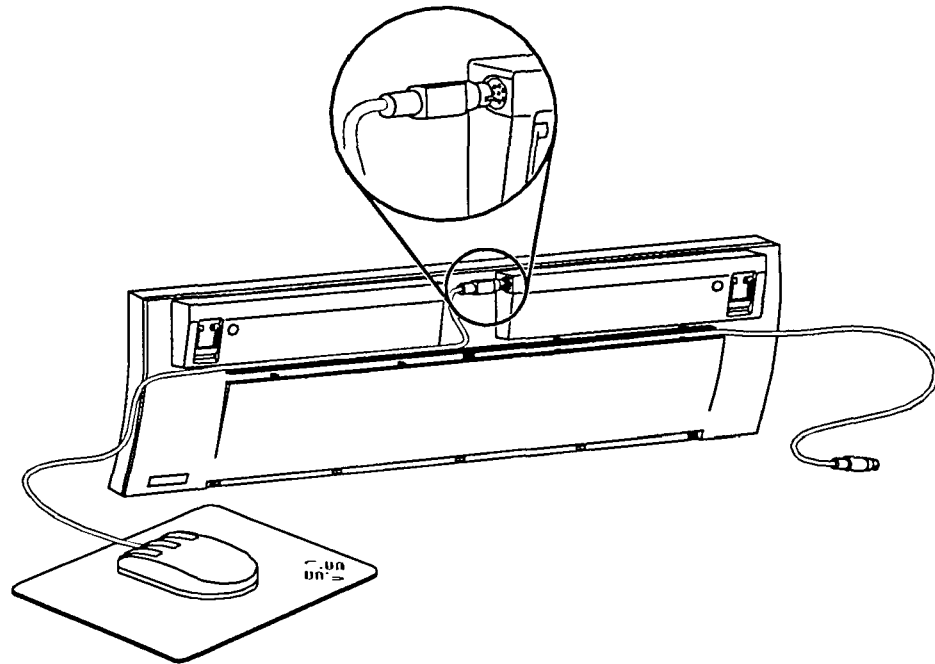


Figure 2 Connecting the Mouse to the Keyboard



4. Route the mouse cable through the mouse cable channel so that the cable exits to right of the keyboard as shown in Figure 2. The cable can also be routed so that it exits from the left or exits from the center of the keyboard.

Connecting the Keyboard to the System Unit

1. The keyboard is shipped with the keyboard cable routed to the left as shown in Figure 2. However, you can reroute the cable through the keyboard cable channel so that the cable exits to the right or at the center of the keyboard.
2. Find the keyboard port on the back panel of the system unit. The keyboard port is labeled with a keyboard icon.

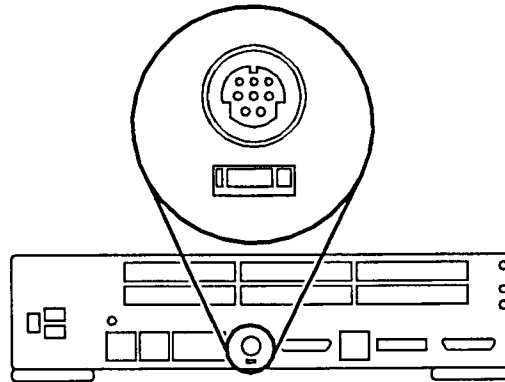


Figure 3 Keyboard Port

3. Push the keyboard cable plug into the keyboard port.
 - a. Align the key groove on the cable plug with the key slot on the port.
 - b. Push the cable plug into the port so that the cable is firmly connected.
4. Place the keyboard in a comfortable position on your desktop. Adjust the angle of the keyboard if necessary.

5. Set the Type 5 mouse on the Type 5 mouse pad.



Note - You must use the new pad (labeled 403368-001) with the Type 5 mouse! The Type 5 mouse does not function correctly with the old Type 4 mouse pad (labeled 403104-001).

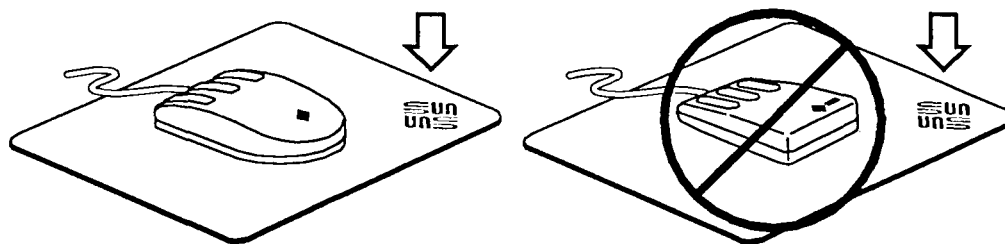


Figure 4 The Type 5 mouse pad has the Sun logo and the grid is gray.

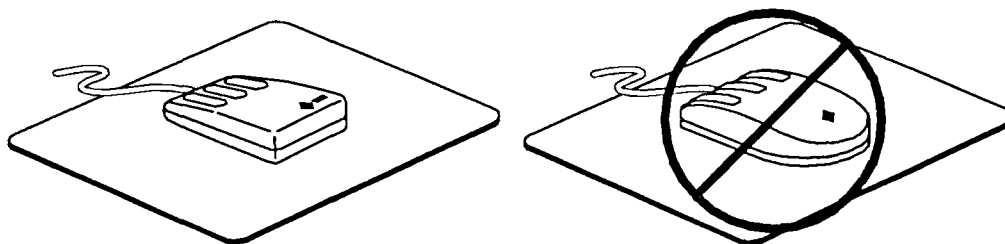


Figure 5 The Type 4 mouse pad does not have the Sun logo and the grid is blue.

6. If you are left-handed, you can reverse the functioning of the mouse buttons.

If your system software supports this, its documentation will have instructions.

If you are installing a new system:



- ◆ **Continue with the installation procedure as described in the installation guide for your platform.**

If you are connecting the Type 5c Keyboard to a system that was already installed:

- ◆ **Turn on the system power and boot the system.**
See the installation guide for your platform for instructions.



Note - If you have trouble double-clicking, go to your properties menu and change the mouse multi-click setting to a longer interval.

Power, Audio, and Display Keys

Power Key



The power key, located in the upper-right corner of the keyboard, enables you to turn your system on and off from the keyboard (on platforms that support this feature).

The power key requires both software and hardware support.

The operating system documentation contains information on power key support and operation, if it is supported.

The power key is not supported on the Sun-4™ series, SPARCclassic™, SPARCstation 1, 1+, 2, 10, SLC™, ELC, IPC, IPX, and LX systems. If your system supports the power key, its documentation has more information about power key support and operation.

Audio/Display Keys: Audio



The three audio keys are located in the upper-right corner of the keyboard. These keys provide audio volume control (mute, volume decrease, and volume increase).

The audio keys require both software and hardware support.

The operating system documentation contains information on the operation of these keys when they are supported.

Audio/Display Keys: Display



The three display keys are located in the upper-right corner of the keyboard. These keys provide display control for degaussing (for monitor displays only), decreasing contrast, and increasing contrast.

The display keys require both software and hardware support.

The operating system documentation contains information on the operation of these keys when they are supported.

These keys require an intelligent display—one that supports keyboard controls. If your display supports keyboard controls, the display documentation has more information about this.

R-Key Support

The Type 5c keyboard no longer supports the R-keys. On the Type 4 keyboard, these keys are located on the right keypad. However, all of the R-keys—except for the R4 key— exist on the Type 5c keyboard, but they are not marked with the R-key number and the arrangement of the keys is different than on the Type 4. To find where the R-keys are located , see “Remapping the Keyboard” on page 12.

Line Feed Key

The Type 5c Keyboard no longer supports the Line Feed key. To enter a line feed character, press Control-j. You can also remap another key to function as the Line Feed key.

Remapping the Keyboard

To remap your keyboard, refer to the keymap assignments shown in Figure 7 through Figure 10 and your operating system documentation.

Table 1 Comparative Mappings for the Right Keypad on Type 4 and Type 5c Keyboards

Key	Type 4 Label	Type 5c Label	Comments
R1	Pause	Pause	Moved on Type 5c
R2	PrSc	Print Screen	Moved on Type 5c
R3	Scroll Lock Break	Scroll Lock	Moved on Type 5c
R4	=	<i>none</i>	No equivalent key on the Type 5c
R5	/	/	Same on both keyboards
R6	*	*	Same on both keyboards
R7	Home, 7	Home, 7	Same on both keyboards
R8	↑, 8	↑, 8	Same on both keyboards
R9	PgUp, 9	PgUp, 9	Same on both keyboards
R10	←, 4	←, 4	Same on both keyboards
R11	5	5	Same on both keyboards
R12	→, 6	→, 6	Same on both keyboards
R13	End, 1	End, 1	Same on both keyboards

Table 1 Comparative Mappings for the Right Keypad on Type 4 and Type 5c Keyboards

Key	Type 4 Label	Type 5c Label	Comments
R14	↓, 2	↓, 2	Same on both keyboards
R15	PgDn, 3	PgDn, 3	Same on both keyboards
B8	Ins, 0	Ins, 0	Same on both keyboards
B10	Del, .	Del, .	Same on both keyboards
B11	Enter	Enter	Same on both keyboards
B14	+	+	Same on both keyboards
B15	-	-	Same on both keyboards



L-Key Labels

The L-keys are no longer labeled with the L-key number on the Type 5c keyboard. They are still marked with their functional names (Stop, Again, etc.) and the functionality remains the same.

Table 2 Type 4 Keyboard L-Key equivalents on the Type 5c Keyboard

<u>This key:</u>	<u>Corresponds to:</u>
Stop	L1
Again	L2
Props	L3
Undo	L4
Front	L5
Copy	L6
Open	L7
Paste	L8
Find	L9
Cut	L10

Type 5 Mouse

- Both the Type 5 mouse and the Type 4 mouse are optical, but the Type 5 LED is infrared.
- The Type 5 mouse functions at a higher cpi (counts per inch). Therefore, the Type 5 mouse does not function correctly with the Type 4 mouse pad and vice versa. See page 7.
- Like the Type 4 mouse, the Type 5 mouse is 1200 baud (bps). The two types of mice are transparent to system software and firmware.

Keycode Assignments

The keycode assignments for all Type 5c Keyboards are shown below. Use these keycodes when remapping your keyboard. Be sure to use the layout for your specific keyboard. Refer to your operating system documentation for more information on remapping keys.

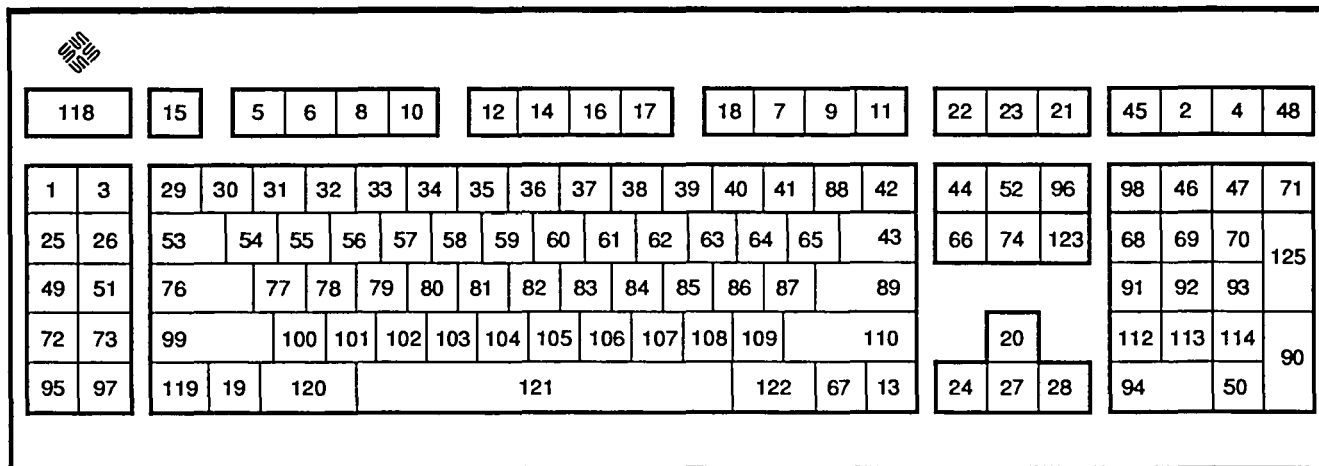


Figure 6 Keycode Assignments for the U.S., Taiwanese, and Korean Keyboards

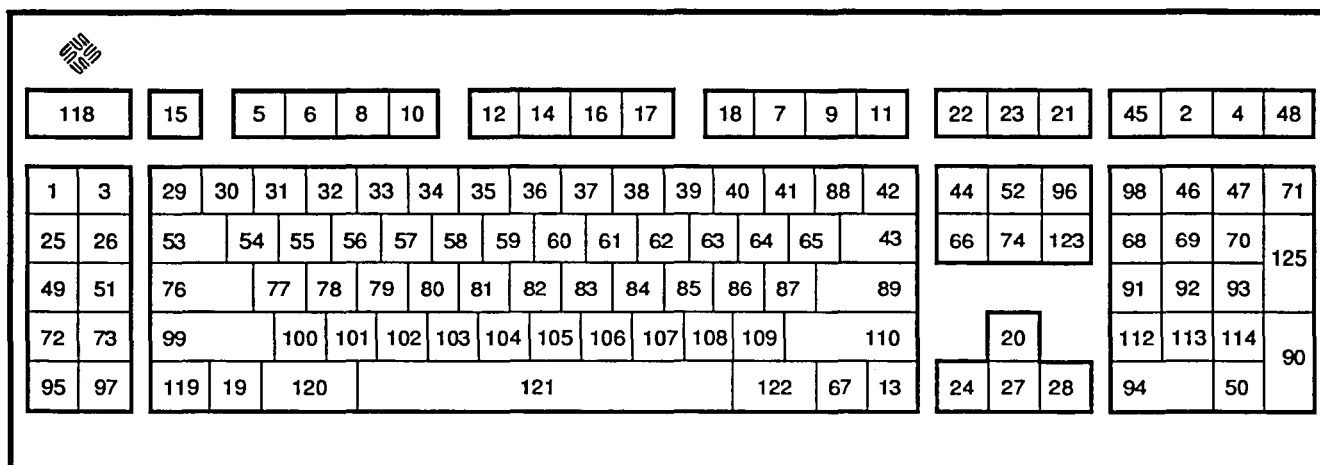


Figure 7 Keycode Assignments for the UNIX Keyboard

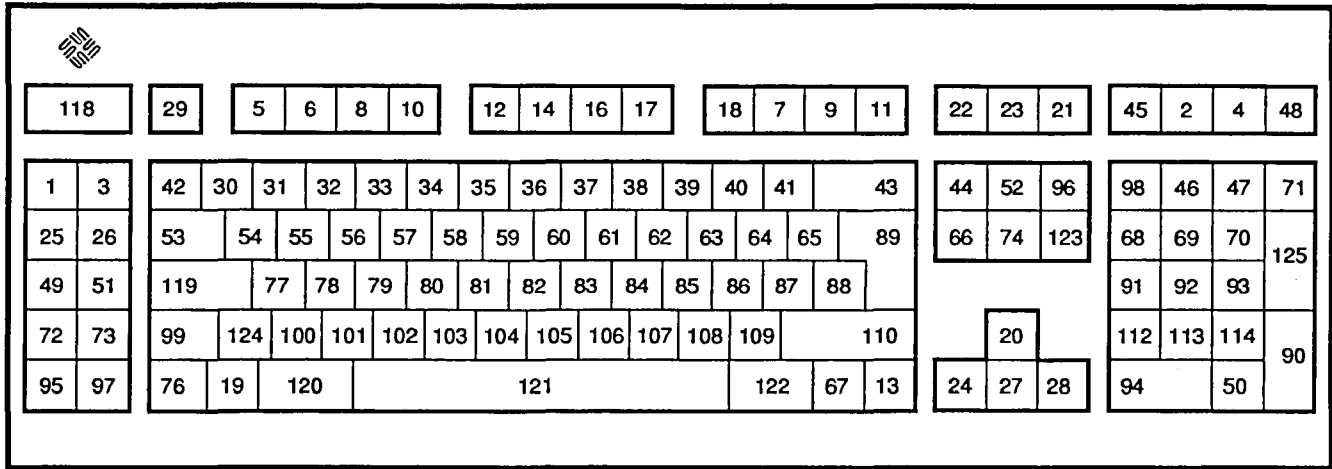


Figure 8 Keycode Assignments for TUV-Compliant Keyboards¹

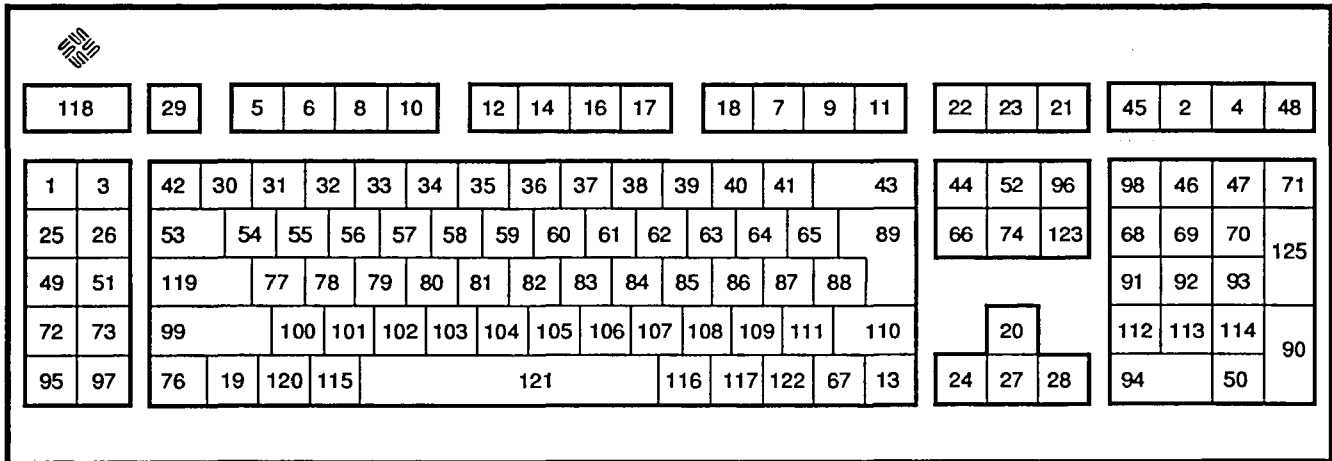


Figure 9 Keycode Assignments for the Japanese Keyboard

1. TUV-compliant keyboards are all keyboards except for U.S., UNIX, Japanese, Korean, and Taiwanese keyboards.



Diagnostic Codes

Read this section only if you have a SPARCstation 2, ELC, or IPX system.

The Type 4 keyboard displays diagnostic codes on the four LEDs (light-emitting diodes) located on the upper-right corner of the keyboard. However, on the Type 5c Keyboard, the LEDs are located on the keys themselves. The diagnostic code patterns have the same meanings—only the *positions* of the LEDs have changed.

For example, a pattern of “off/off/on/on” on a Type 4 keyboard would appear like this:

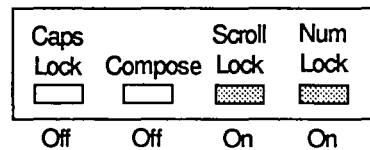


Figure 10 Type 4 Keyboard LEDs

On a U.S. Type 5c Keyboard, the pattern would appear like this:

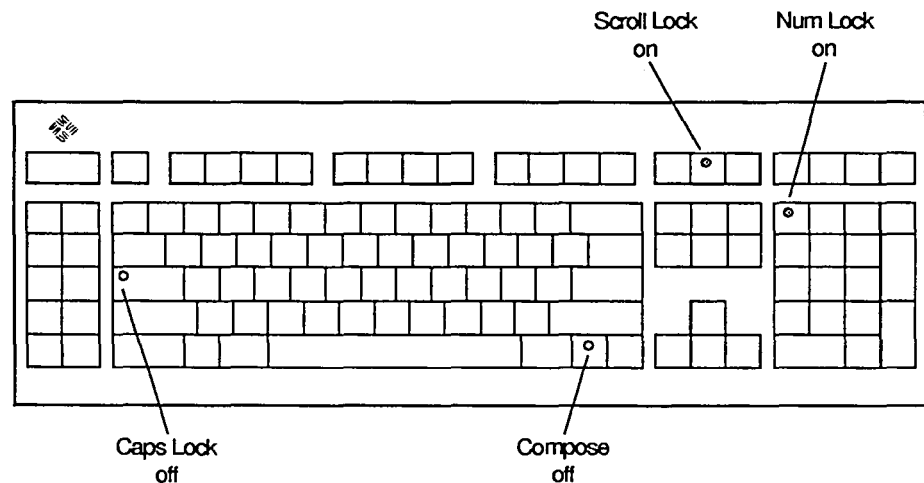


Figure 11 U.S. Type 5c Keyboard LEDs

For more information on the diagnostic codes, see the documentation for your system.



Known Problems

OpenWindows 3.0.0 Environment

If you have a Dutch keyboard and are running the OpenWindows 3.0.0 environment, the keystrokes are reversed for the upper and lowercase letter S. This means that if you press the S key, you get an uppercase letter "S," and if you press Shift-s, you get a lowercase letter "s."

To fix this:

1. Log on as superuser to the host machine where the OpenWindows software is running in the local disk (possibly a server).
2. Edit the file `$OPENWINHOME/etc/keytables/Netherland5.kt` and change line number 235 from:

```
78  RN      XK_S      XK_s      XK_ssharp
```

to:

```
78  RN      XK_s      XK_S      XK_ssharp
```

This problem was corrected in Open Windows 3.0.1.

OpenWindows 2.0 Environment

If you have a Danish, Dutch, German, Norwegian, or Swedish keyboard and are running the OpenWindows 2.0 environment, the decimal separator (comma) on the numeric keypad (located on the lower right-hand corner of the keyboard) produces a period (".") instead of a comma (","). To fix this, you must upgrade to OpenWindows 3.0 software.